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MineQuest Report Summary
Reference: RS212

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1155 W
Pender

First Fraser Minerals Limited Partnership
Tertiary Placer Project

SUMMARY AND CONCLUSIONS

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by

K.V. Campbell, Ph.D.

of

MineQuest Exploration Associates Ltd.

Tim Ryan Pres 669-2251
Vic Campbell

OVERVIEW OF PROJECT

Exploration by the Partnership in central British Columbia has been successful in locating the extension of a gold-bearing Tertiary channel of the ancestral Fraser River. Two producing mines were located on this channel, c.1900 - 1935. One of these is the site of exploration and limited production today.

The gold is contained within a conglomerate that has been successfully mined by underground techniques. In addition to the gold in the conglomerate, there is a strong possibility that the bedrock source of the gold is within the immediate area.

This brief summarizes the work done, conclusions and recommendations.

Figure 1 is a location map of the project area. Mineral claims and placer leases have been acquired along the course of the channel.

SUMMARY OF FIELDWORK

1981-1984

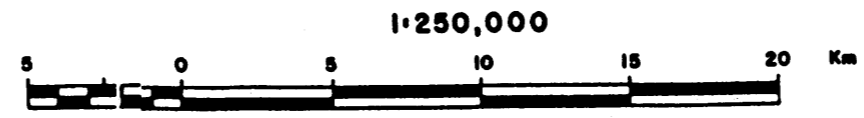
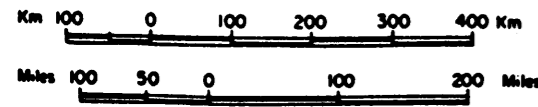
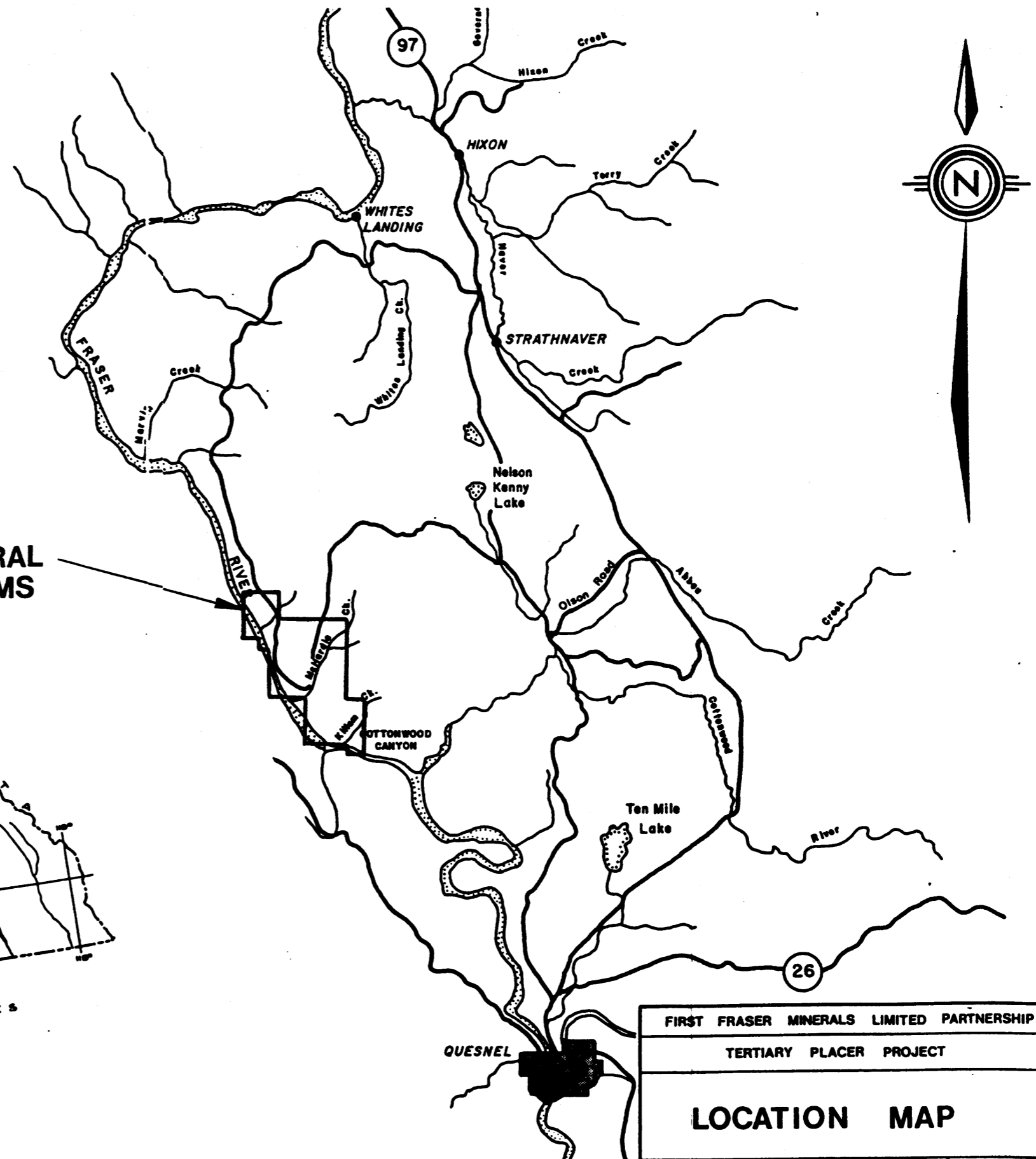
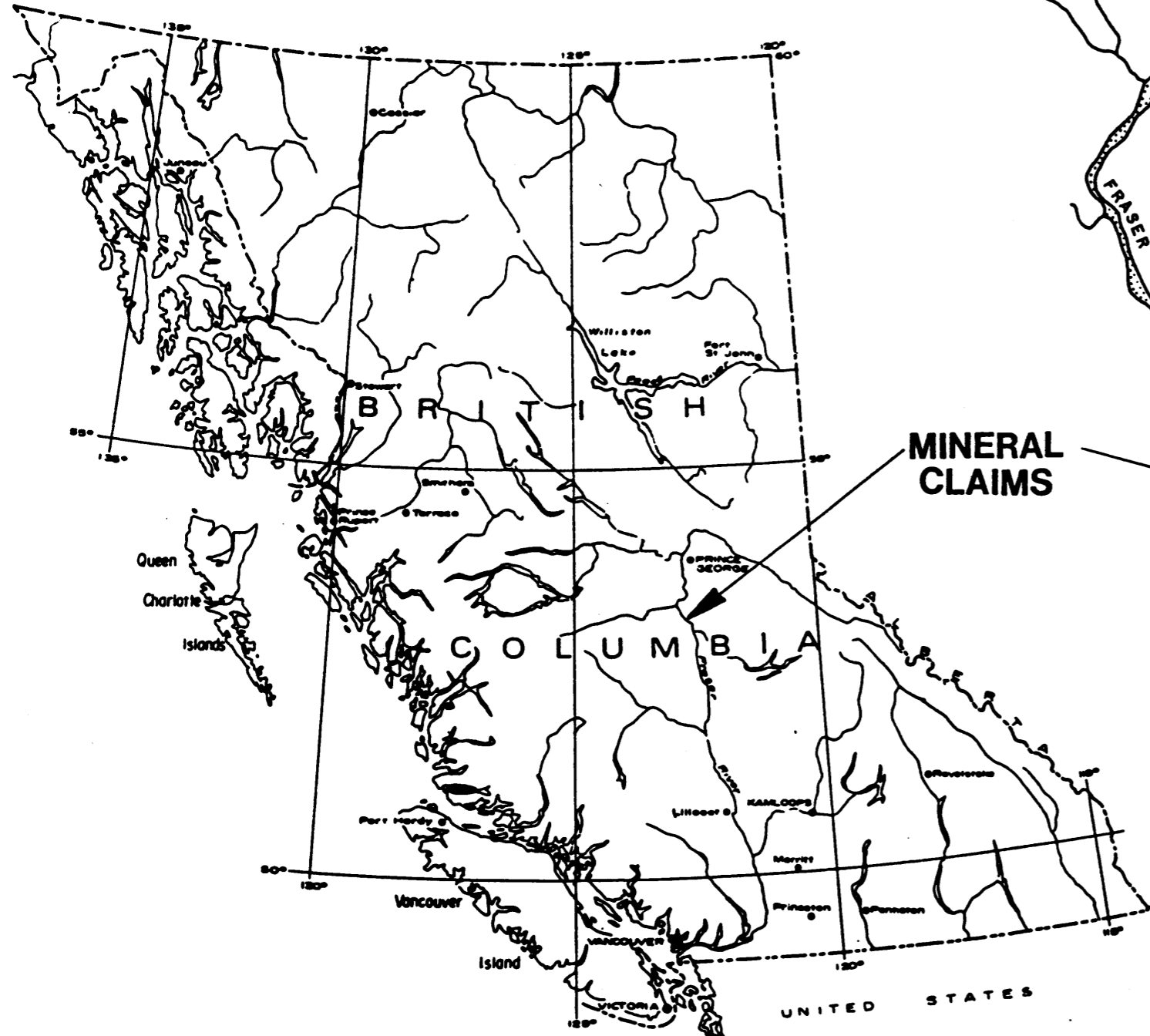
- remote sensing, regional prospecting, silt and rock chip sampling

1985

- first placer leases and mineral claim staked
- water sampling, heavy mineral sampling and assays of Tertiary conglomerate
- seismic profiling (five lines totalling 5181.6 metres)
- photogrammetric mapping of area, scale 1:5,000

October 1986 to February 1987

- legal survey of placer leases at south end channel
- biogeochemistry survey (1km², 363 samples)
- ground magnetometer survey (77 line kilometres)
- 10 percussion and rotary drill holes (854.96 metres)



FIRST FRASER MINERALS LIMITED PARTNERSHIP			
TERTIARY PLACER PROJECT			
LOCATION MAP			
PLAN No.	DRAWN	DATE	FIGURE
		APRIL 87	1
Revised		N.T.S.	
		93 G/2E	
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1:250,000

CONCLUSIONS

Presence of Tertiary Channel and Auriferous Conglomerate

All of the work to date supports the conclusion of a major river channel, Middle Miocene in age, having occupied a bedrock depression extending some 7.5 kilometres north and west of the Cottonwood Canyon. This Tertiary channel is floored with crystalline gold-bearing, quartz-rich conglomerate (lower Fraser Bend Formation) or a auriferous, quartz-rich gravel cemented to varying degrees (middle Fraser Bend Formation). Typical placer gold occurs in the upper member of the Formation.

The general course of the Tertiary channel is shown in Figure 2, interpreted from the seismically inferred rims and magnetic anomaly trends.

Gold Content of Tertiary Conglomerate

Table 1 summarizes reported gold grades in the Tertiary conglomerate, which range from 0.04 to 0.28 ounces per cubic yard. Over a 2.1 metre (7 feet) working height, which includes 0.6 metres (2 feet) of bedrock and 1.5 metres (5 feet) of basal conglomerate, the author considers a grade between 0.1 and 0.2 per cubic yard to be a realistic expectation.

Table 1 - Reported Gold Contents of Tertiary Conglomerate

Site or Sample	Source	Original Reference	Conversion Factors	Grade Reported (R) or Calculated (C)
Tertiary Mine, 1924	B.C.M.M. Ann. Rept., 1924, Fraser, 1934	\$1 to \$1.50 per car	- gold worth \$18.50/oz, - 2 car loads per cu yd*	(i) 0.108 to 0.162 oz/cu yd (C)
Tertiary Mine, 1926	B.C.M.M. Ann. Rept., 1926, Fraser, 1934	\$1.50 to \$2.00 per ton	- gold worth \$18.50/oz, - 2 tons per cu yd	(ii) 0.162 to 0.216 oz/cu yd (C)
Canyon Mine, 1982-1983	Tidsbury, 1983	---	---	(iii) 0.125 oz/cu yd (R) from 80 cu yds (iv) 0.129 oz/cu yd (R) from 4 cu yds
Canyon Mine, 1984	All Star Resources Vancouver Province, January, 1985	---	---	(v) 0.043 to 0.283 oz/cu yd (R) from 0.45 cu ft**
Canyon Mine, 1985	All Star Resources, News Release, February, 1987	421.634 oz gold recovered from 9,932 cu yds	---	(vi) 0.0425 oz/cu yd (C)

* one car believed to carry one net ton (2000 pounds), B.C.M.M. Annual Report, 1925, A148
 ** boulders removed

Potential for Bedrock Mineralization

Crystalline gold is intimately associated with microscopic quartz prisms in the cement of the conglomerate. This is strong geological evidence that mineralized solutions precipitated gold directly into porous Tertiary gravels that became the conglomerate. It is also possible that the Tertiary Fraser River eroded a pre-existing deposit. Furthermore, the presence of associated alum in the cement is taken as evidence for hydrothermally or epithermally charged groundwaters being the source of the gold. Therefore, the area has considerable potential for precious metal mineralization. It is noteworthy that the project area lies on or near the western boundary of the Quesnel Trough and is cut by strands of the Pinchi Fault Zone, a major deep seated transverse fault which is the locus of precious metal deposits elsewhere.

Estimates of Channel Dimensions, Ore Volumes and Contained Gold

Table 2 summarizes channel data. There is a strong possibility, about 40% geologically inferred and 60% proven, that a 100 to 200 metre wide channel over 6.3 kilometres long underlies the Partnership leases. The estimated volume of conglomerate on the leases could conservatively be between 450,000 and 1,378,000 cubic yards. Applying the historical grades of 0.1 to 0.2 oz/cubic yard, the gold content would be between 46,000 and 275,600 ounces. These estimates do not take into account gold contained within the upper and middle members of the Fraser Bend Formation or in bedrock.

TABLE 2 - SUMMARY OF TERTIARY CHANNEL STATISTICS

Width of Channel	250 to 300 m (800 to 1000 ft)
Width of deepest portion	100 to 200 m (300 to 650 ft)
Channel length on Partnership leases	6300 m (20,670 ft)
Thickness of conglomerate	6.1 to 7.6 m (20 to 50 ft)

Estimated volume of conglomerate on Partnership leases

6 ft thick, 20,670 ft long

100 ft width:	459,333 cubic yards
300 ft width:	1,378,000 cubic yards
650 ft width:	2,986,670 cubic yards

Grade: based on recorded production

1924:	0.108 to 0.162 oz/cubic yard (0.054 to 0.081 oz/ton)
1926:	0.162 to 0.216 oz/cubic yard (0.081 to 0.108 oz/ton)
1987a*:	0.087 oz/cubic yard (0.1746 oz/square yard)
1987b**:	0.113 oz/cubic yard

For estimates, use 0.1 to 0.2 oz/cubic yard

Estimated Gross Value

100 ft width:	45,900 oz to 91,800 oz (\$24,700,000 to \$49,380,000)
300 ft width:	137,800 oz to 275,600 oz (.1 to .2 oz/cubic yard) (\$74,600,000 to \$149,000,000)
650 ft width:	298,500 oz to 597,000 oz (.1 to .2 oz/cubic yard) (\$160,500,000 to \$321,000,000)

1 oz = CAN \$538

* based on recovery at Canyon Mine by All Star Resources

** estimate by L.J. Manning

Recommendations

Based on the favourable results to date, which confirm the presence of a Tertiary channel and auriferous conglomerate, a staged program in two areas is recommended for the next phase of exploration. The objectives are to determine which of the following choices, if any, are logical next steps towards production:

- (1) bulk sampling at the north end of the channel,
- (2) bulk sampling at some middle section of channel, or at the south end north of Killam Creek,
- (3) access through or near the old workings.

Toward these goals a program of drilling and seismic profiling is recommended. The proposed work areas are shown in Figure 2.

Exploration at North End

Seismic profiling and reverse circulation drilling at the north end are the first steps to take. The proposed work area is indicated in Figure 2, and includes two or three seismic lines totalling about one kilometre and four to seven drill holes (450 - 780 metres) at 20 to 30 metre spacings, along the '200 D' road. The drill sites could change depending upon the results of the seismic work. The possibility of excavating should be considered if the floor of the channel turns out to be relatively accessible.

The second stage of exploration at the north end would be to bulk sample the conglomerate.



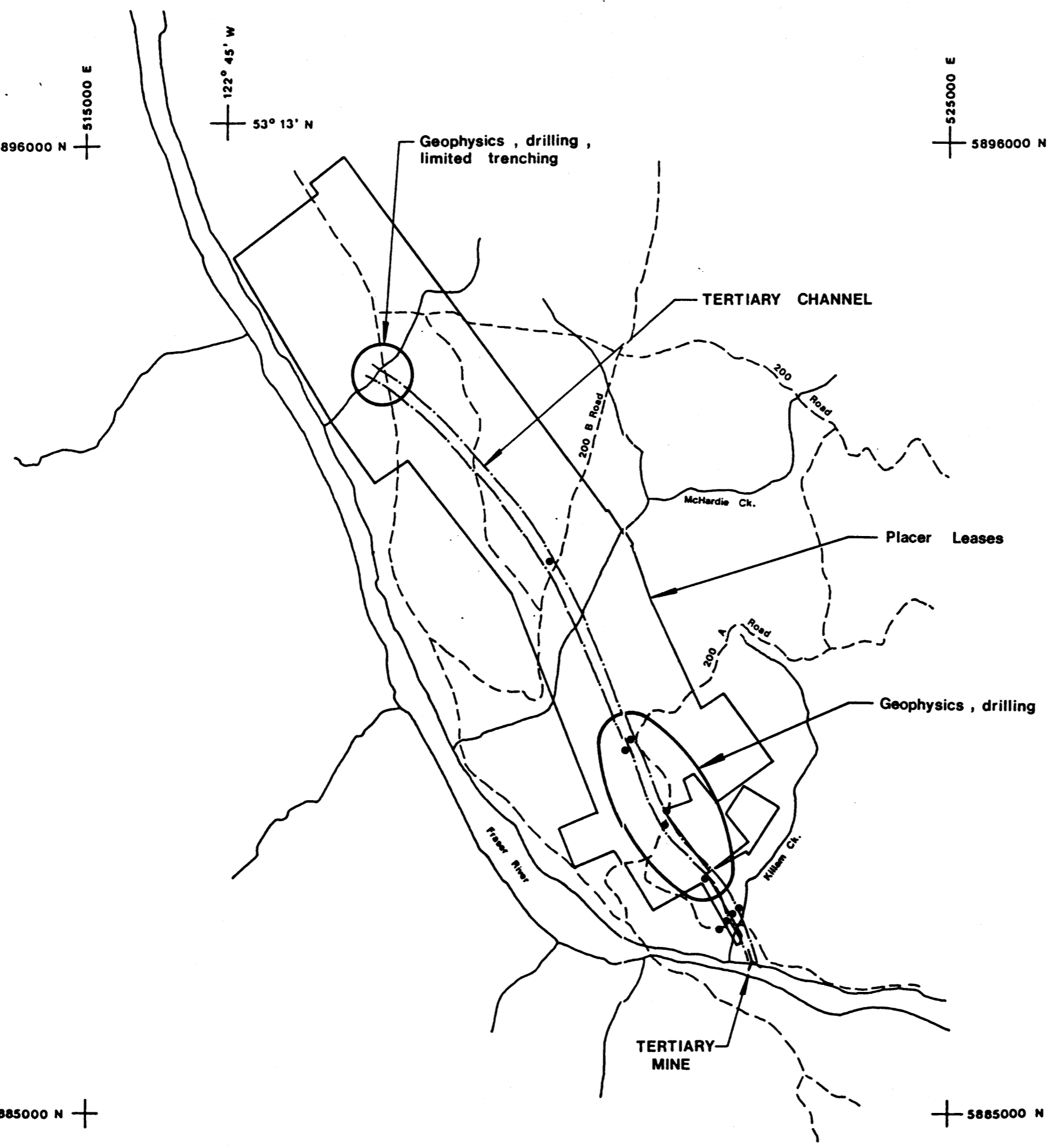
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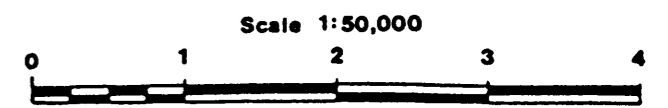
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5896000 N

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+ 5885000 N



- DRILL HOLE COMPLETED ('86/'87)
- Channel indicated by ground magnetometer survey, and seismic survey



FIRST FRASER MINERALS LIMITED PARTNERSHIP			
TERTIARY PLACER PROJECT			
PROPOSED WORK AREAS 1987/88			
PLAN No.	DRAWN	DATE MAY 87	FIGURE 2
Revised		N.T.S. 93G/2E	
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Sampling South Half of Channel

Drilling and a limited amount of seismic profiling are recommended north of Killam Creek, for:

- (1) mapping the paleochannel topography for future underground development purposes in order to
- (2) obtain an accurate in-situ sample of the basal conglomerate over the channel width.

A combination of drilling methods (air rotary, reverse circulation and churn drilling) are recommended. Drilling a 8" hole with a mud rotary drill and casing with 6" pipe to the top of the quartz-rich gravels is suggested as a quick and economical way of getting through the overlying clays and silts. Churn drilling through the gravels and conglomerate would then follow. Alternatively, reverse circulation drilling could be used to test for the presence of the conglomerate, although the sample would not be adequate for grade estimation.

About one kilometre of seismic profiling and 15-20 holes (2450 to 3260 metres) at 20 to 30 metre spacings are required for this stage.

The drilling would not be adequate to sample the entire length of the channel. Rather, the work will focus on areas where the auriferous conglomerate is known to be present and could be accessible through declines from the west or south.

The second stage of exploration on the south half of the channel would be to construct a decline and bulk sample the conglomerate.

ESTIMATED COST

Exploration at North End

Stage I - Exploration

Seismic profiling, 1 km	\$ 5,000
Reverse circulation drilling	
7 holes, 800 m at \$82/m.....	65,600
Sampling and analysis.....	5,000
Surveys, line preparation.....	1,000
Access roads, drill site preparation	8,000
Supervision, reporting	5,000
Total Stage I.....	<u>\$ 89,600</u>
Allow.....	\$100,000

Stage II - Bulk Sampling

Excavation, bulk sampling.....	<u>\$400,000</u>
Total.....	<u><u>\$500,000</u></u>

Sampling South Half of Channel

Stage I - Exploration

Seismic profiling, 1 km	\$ 5,000
Reverse circulation drilling	
18 holes, 2500m at \$82/m.....	205,000
Churn drilling, 6 holes, 200m @ \$250/m....	50,000
Sampling and analysis.....	10,000
Access roads, drill site preparation	2,000
Supervision, reporting	10,000
	<u>Total Stage I....\$283,000</u>
	Allow....\$300,000

Stage II - Bulk Sampling

Decline Construction.....	<u>\$1,500,000</u>
	<u>Total...\$1,800,000</u>